

# Delayed Motor Cortex Intracerebral Hemorrhage Presented as Status Epilepticus Following Foramen Magnum Meningioma Surgery

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## ABSTRACT

Meningiomas are rare tumors of posterior fossa. Delayed intracranial hemorrhage is a rare complication of surgeries in this territory. Herein, we report a case of status epilepticus as a result of delayed motor cortex hemorrhage, complicating resection of a meningioma arising from foramen magnum.

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## INTRODUCTION

Given that posterior fossa is not a common origin for meningiomas, studying the nature of these tumors, surgical approaches to them and their complications could be appealing<sup>1</sup>. Remote supratentorial hematoma is a rare but dreadful complication that mostly happens soon after surgical removal of a mass arising from posterior fossa<sup>2-5</sup>.

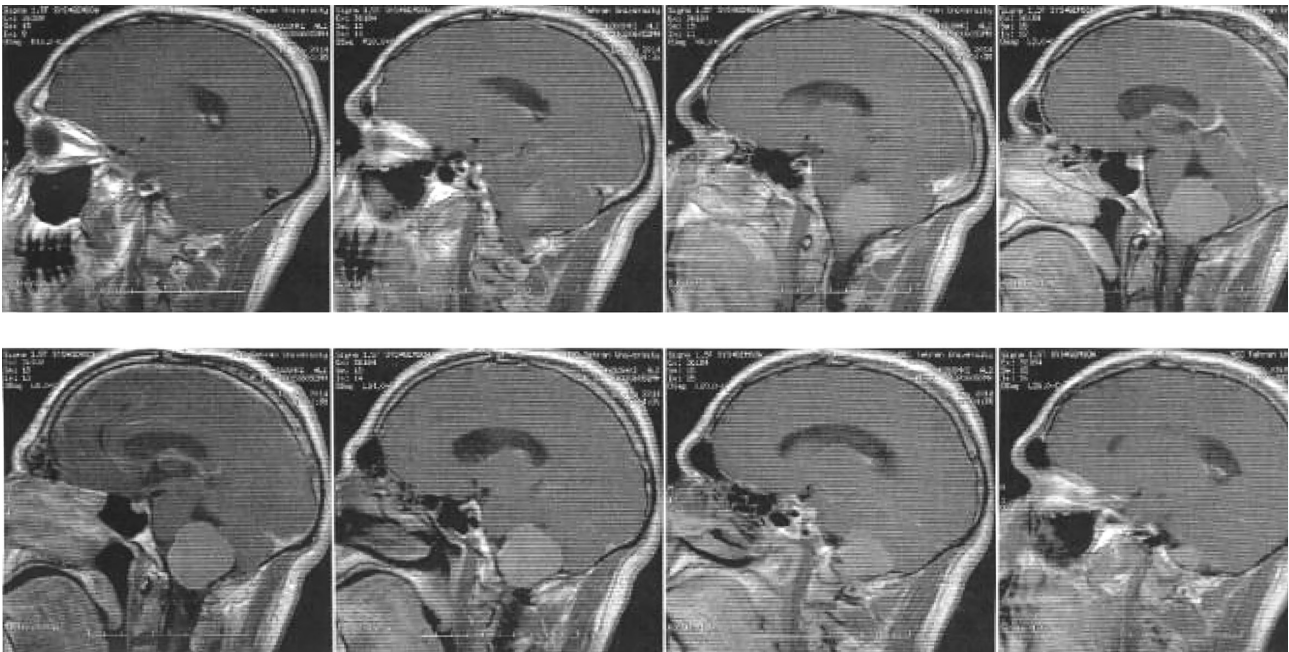
Here we present a case of delayed intracerebral hemorrhage following surgical removal of a meningioma emerged in hypoglossal canal.

## CASE REPORT

A 32 year-old man presented with a pulsatile, non-positional headache of three years duration that has recently become refractory to common migraine medications. He also complained of recent mild nausea, transient visual obscurations and occasional falling due to imbalanced gait without any associated focal neurologic deficit. He had no prior history of trauma or any serious medical condition. He was on valproate and propranolol for his headaches and periodically took non-steroidal anti-inflammatory drugs (NSAIDs). He was a civil engineer and worked in an office. He neither drank alcohol, nor

smoked. His family history was negative for any prominent illness such as cancer. Systematic physical exam revealed no significant finding. On neurologic exam, he was an awake man with full score on mini mental state exam (MMSE). Ophthalmoscopy showed mild papilledema; otherwise cranial nerves were intact. He was clumsy on cerebellar tests but had normal motor forces and deep tendon reflexes. Imaging exposed a posterior fossa tumor, compatible with meningioma (Figure 1).

Surgery was performed via midline suboccipital approach with C1 laminectomy. After craniotomy, dura was opened and a hypervascular mass exposed that dissected from surrounding tissue and completely resected. Dura was repaired with precranial patch and no obvious cerebrospinal fluid (CSF) leak was detected. Pathologic review confirmed the diagnosis of meningioma. Patient was discharged after 2 days without any further complaint. Three days later, he was admitted to hospital due to status epilepticus. Emergent management of seizures included intubation and initiation of antiepileptic therapy. Computed tomography (CT) showed extensive intracerebral hemorrhage in right parietal lobe (Figure 2). His blood pressure was normal



**Figure 1.** Post-contrast sagittal view of MRI shows a round homogeneously-enhanced extra axial tumor arising from base of skull, with mass effect on fourth ventricle and medulla.



**Figure 2.** Sagittal T1 view of brain MRI shows subacute cortical intracerebral hemorrhage with no evidence of residual tumor in posterior fossa.

and he did not have any coagulopathy. Administering sodium valproate and levetiracetam, seizures were controlled so he was extubated after two days. Aspiration pneumonia was controlled with proper antibiotics. He was fully recovered and discharged the following week.

## DISCUSSION

Meningiomas are one of prevalent tumors of central nervous system, accounting for about 20% of all intracranial neoplasms<sup>1,6</sup>. Nearly 20% of such tumors are placed in posterior fossa, of which hypoglossal canal is a rare origin<sup>7</sup>. The most presenting symptoms are cranial nerve dysfunction, gait disturbance and

intracranial hypertension<sup>8,9</sup>. Because of slow growth rate of meningiomas, the mean duration of symptoms is 2.9 years and tumor size is usually large at discovery<sup>9</sup>.

Generally, primary tumors of hypoglossal canal are rare that results in debates about the approach of choice in these patients<sup>10,11</sup>. Neurosurgeons frequently use lateral suboccipital retrosigmoid, subtemporal-transtentorial, frontotemporalpterional and supra-infratentorial presigmoid<sup>9</sup>. Midline suboccipital approach to hypoglossal canal is considered to be a “straightforward, easy-to-learn and therefore time-saving and safe procedure”, as Herlan et al noted<sup>12</sup>. In our case, the operation went out well via this technique with no early detectable complication.

Remote intracerebral bleeding is seen in limited cases worldwide. It often complicates supratentorial operations. Posterior fossa surgeries for various pathologies may be seldom followed by supratentorial hemorrhage<sup>2,13</sup>. Some research showed that aside from hypertension and coagulopathy, no other definite cause is diagnosed in these cases<sup>14</sup>. But interestingly, in a review by Brisman et al, neither hypertension nor coagulopathy were concluded as risk factors. They reported that remote bleeding tends to happen within few hours after surgery and is related to transient vascular or mechanical factors, sitting position in suboccipital approaches resulting in brain displacement, intraoperative dehydration and CSF aspiration<sup>15</sup>. Literature shares only a few cases of delayed hemorrhage in surgeries of posterior fossa<sup>2</sup>. In mentioned cases of such delayed hemorrhage, hematoma developed near underlying pathologies that did not exist in our case. Previously considered related factors such as sitting position during surgery does not attribute to these late onset hematomas with normal neurologic exam in first days of post-op. Further studies are needed to evaluate possible relative pathologies.

## CONCLUSION

Remote supratentorial intracerebral hemorrhage after posterior fossa surgery is rare. It almost always happens within few hours after surgery but it can happen in the following days. Any work up for even late clinical deterioration after such operations should include evaluation for this rare but still dreadful consequence.

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## REFERENCES

1. Bondy M, Ligon BL. Epidemiology and etiology of intracranial meningiomas: a review. *Journal of neuro-oncology*. 1996;29(3):197-205.
2. Tondon A, Mahapatra AK. Supratentorial intracerebral hemorrhage following infratentorial surgery. *Journal of clinical neuroscience : official journal of the Neurosurgical Society of Australasia*. 2004;11(7):762-5.
3. Bucciero A, Quaglietta P, Vizioli L. Supratentorial intracerebral hemorrhage after posterior fossa surgery. Case report. *Journal of neurosurgical sciences*. 1991;35(4):221-4.
4. Haines SJ, Maroon JC, Jannetta PJ. Supratentorial intracerebral hemorrhage following posterior fossa surgery. *Journal of neurosurgery*. 1978;49(6):881-6.
5. Seiler RW, Zurbrugg HR. Supratentorial intracerebral hemorrhage after posterior fossa operation. *Neurosurgery*. 1986;18(4):472-4.
6. Claus EB, Bondy ML, Schildkraut JM, Wiemels JL, Wrensch M, Black PM. Epidemiology of intracranial meningioma. *Neurosurgery*. 2005;57(6):1088-95; discussion -95.
7. Neeff M, Baysal E, Homer J, Gillespie J, Ramsden R. Intracranial/Extracranial meningioma arising in the hypoglossal canal: case report. *Skull base : official journal of North American Skull Base Society [et al]*. 2007;17(5):325-30.
8. Symon L, Pell M, Singh L. Surgical management of posterior cranial fossa meningiomas. *British journal of neurosurgery*. 1993;7(6):599-609.
9. Lobato RD, Gonzalez P, Alday R, Ramos A, Lagares A, Alen JF, et al. Meningiomas of the basal posterior fossa. Surgical experience in 80 cases. *Neurocirugia*. 2004;15(6):525-42.
10. Tatagiba M, Koerbel A, Roser F. The midline suboccipital subtonsillar approach to the hypoglossal canal: surgical anatomy and clinical application. *Acta neurochirurgica*. 2006;148(9):965-9.
11. Hadley KS, Shelton C. Infratemporal fossa approach to the hypoglossal canal: practical landmarks for elusive anatomy. *The Laryngoscope*. 2004;114(9):1648-51.
12. Herlan S, Ebner FH, Nitz A, Hirt B, Tatagiba M, Roser F. The midline suboccipital subtonsillar approach to the cerebellomedullary cistern and its structures: anatomical considerations, surgical technique and clinical application. *Clinical neurology and neurosurgery*. 2014;125:98-105.
13. Agrawal A, Kakani A, Ray K. Extensive supratentorial hemorrhages following posterior fossa meningioma surgery. *Journal of surgical technique and case report*. 2010;2(2):87-9.
14. Kalkan E, Eser O. Supratentorial intracerebral haemorrhage following posterior fossa operation. *Neurology India*. 2006;54(2):220-1.
15. Brisman MH, Bederson JB, Sen CN, Germano IM, Moore F, Post KD. Intracerebral hemorrhage occurring remote from the craniotomy site. *Neurosurgery*. 1996;39(6):1114-21; discussion 21-2.